

NIDIS Weekly Climate, Water and Drought Assessment Summary

Upper Colorado River Basin

October 19, 2010

Precipitation and Snowpack

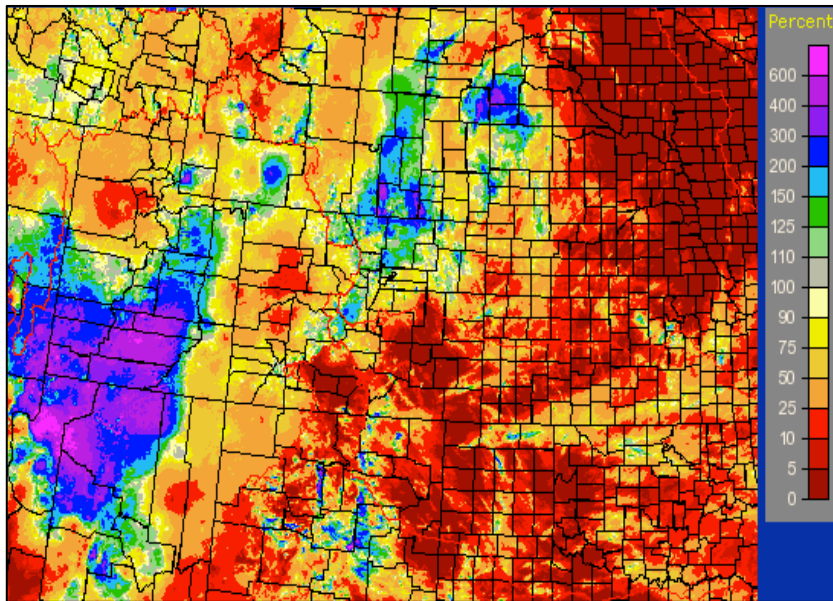


Fig. 1: October month-to-date precip as percent of average

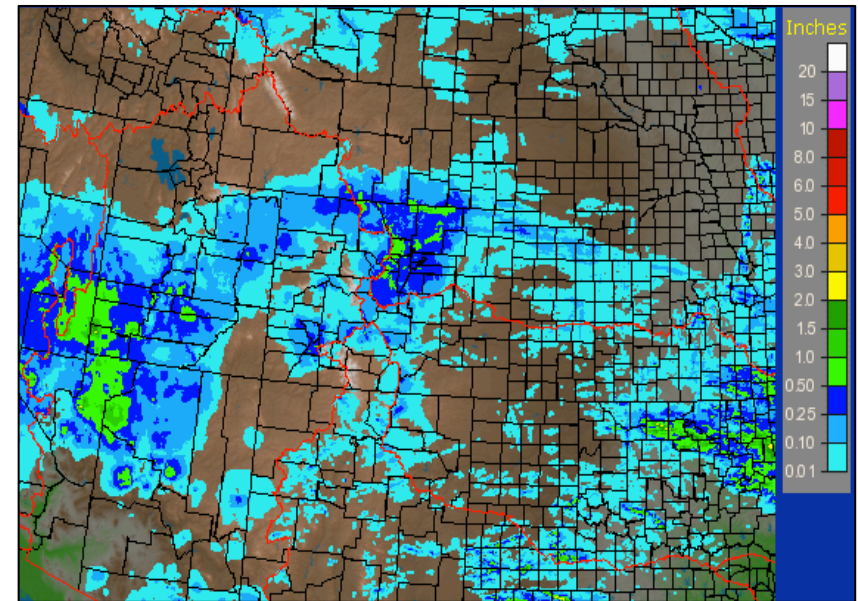


Fig. 2: October 13 – 19 precipitation in inches

For the month of October, the eastern portion of the Upper Colorado River Basin (UCRB) has continued to experience dry conditions—a pattern that has continued since late August (Fig. 1). The western part of the UCRB in Utah has received some beneficial moisture since the beginning of October. Some of the counties in southeastern Wyoming have also seen beneficial moisture this month, though the eastern plains of Colorado and south into the Rio Grande basin continue to show significant precipitation deficits.

The South Platte and Colorado basins in Colorado received much needed rain and snow over the last week (Fig. 2). Amounts just east of the Continental Divide totaled near 1 inch for the week. Southern Utah also received good amounts of moisture. The Upper Green River basin in Wyoming and the four-corners region remained dry over the past week, while some areas in the central CO mountains received less than a tenth of an inch of moisture.

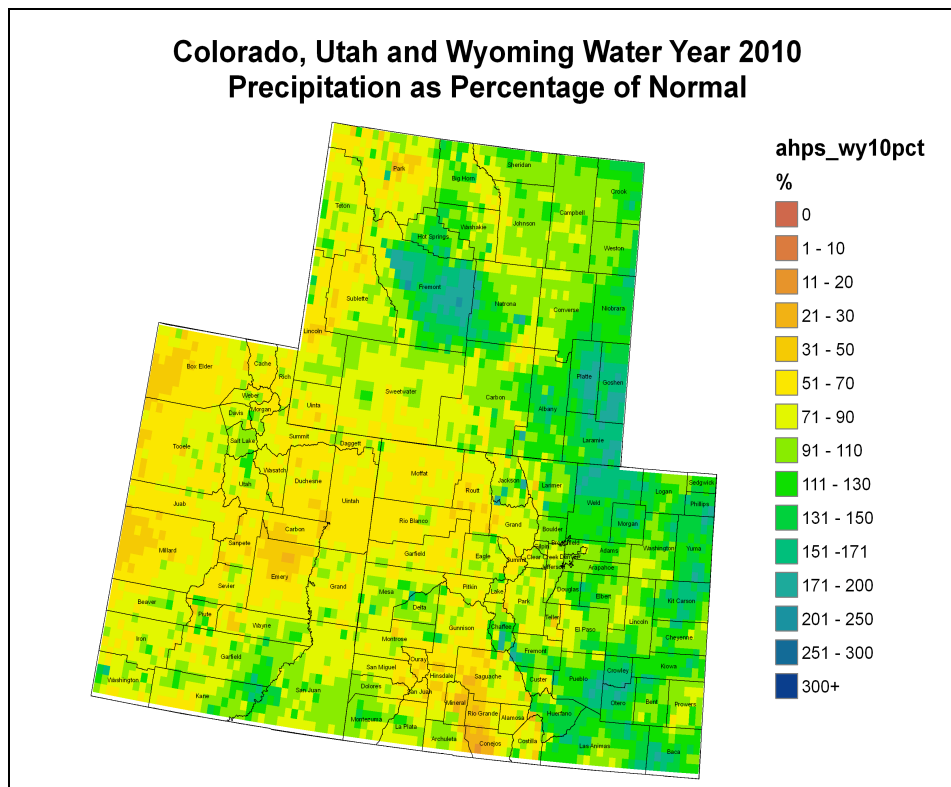


Fig. 3: Advanced Hydrologic Prediction Service WY2010 precipitation as percent of normal for CO, WY, and UT.

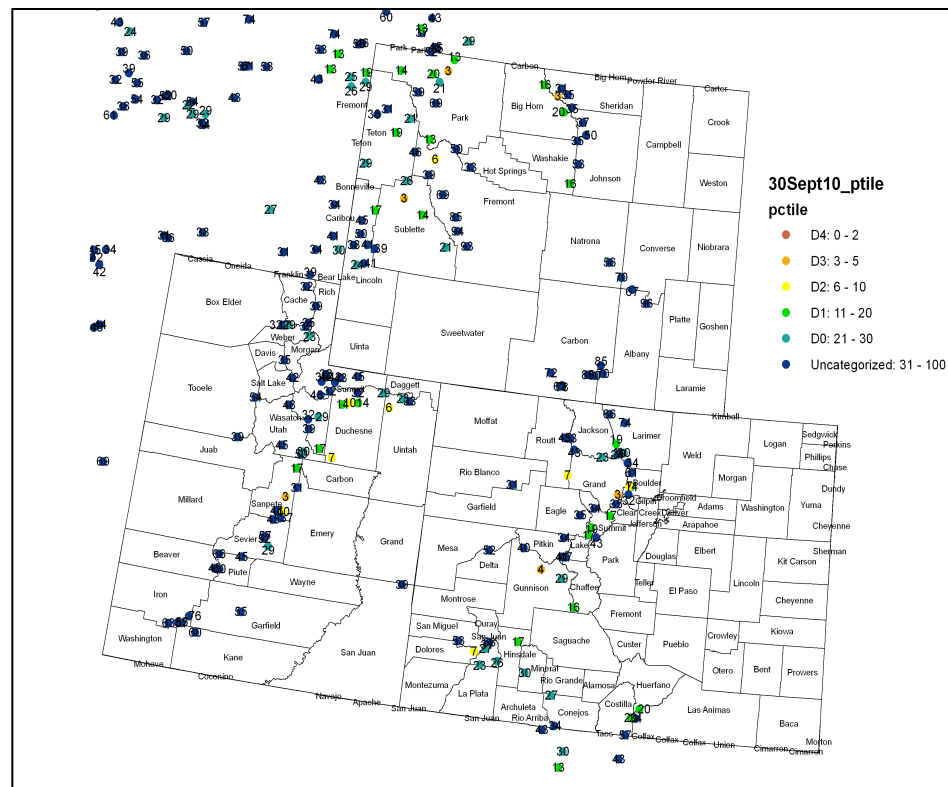


Fig. 4: SNOTEL WY2010 precipitation percentiles (50% is median, 21-30% is Drought Monitor's D0 category).

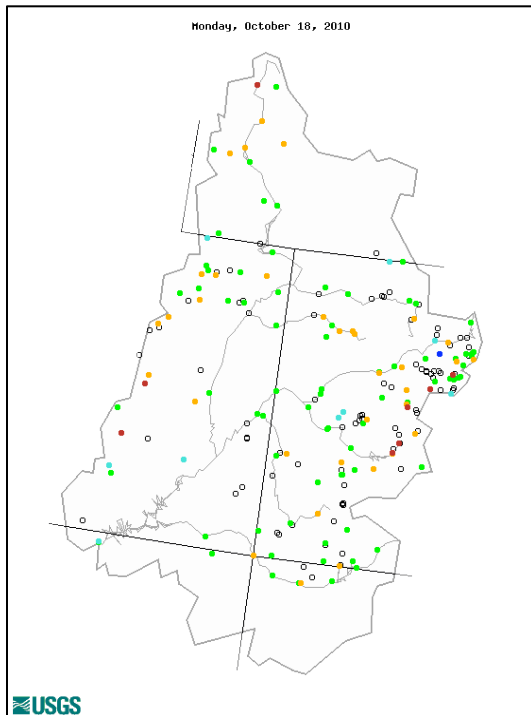
For the water year (WY2010, Oct. 2009 – Sept. 2010) most of the UCRB saw near average to slightly below average precipitation (Fig. 3). Emery County, UT in the Dolores basin was driest, only receiving around 50% of its annual average. The Rio Grande basin was also very dry, due to lack of moisture at the beginning of WY2010, and again in the late spring and summer. Though eastern portions of CO and WY have recently been dry, WY2010 precipitation amounts were mostly above average.

WY2010 percentiles for the SNOTEL sites in the UCRB show the lowest values corresponding with locations of current abnormal dryness (D0 category, lower than the 30th percentile) on the U.S. Drought Monitor map—in the Rio Grande basin, the Upper and Lower Green River basins and near the Colorado headwaters region (Fig. 4).

Streamflow

As of October 18th, about 70% of the USGS streamgages in the UCRB recorded normal (25th – 75th percentile) or above normal 7-day average streamflows (Fig. 5). This is an improvement from a couple of weeks ago, though it appears as though some of the improvement in the basin was due to reservoir releases on regulated portions of the rivers.

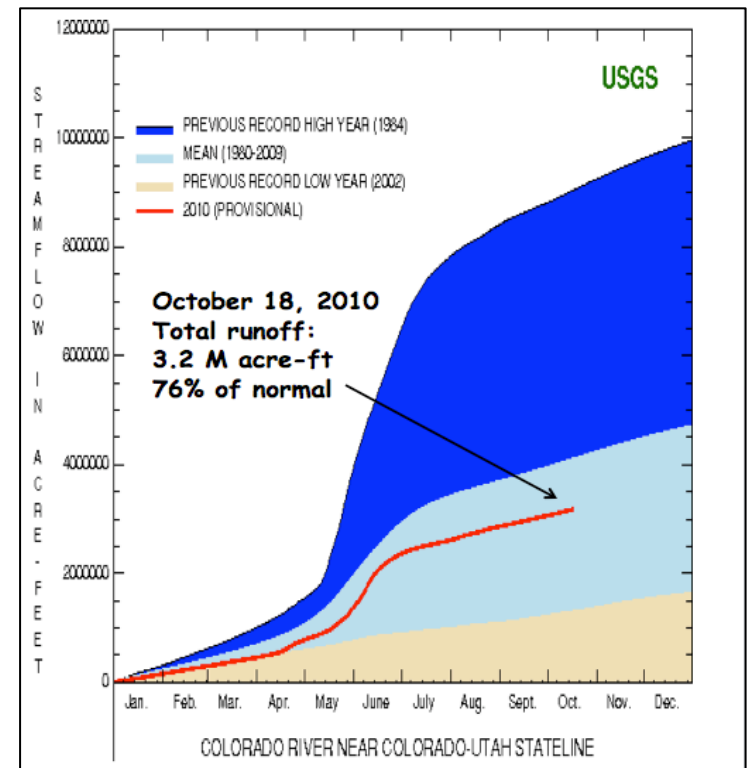
Though many sites are showing near normal flows for this time of year, many of the gages still show a shortage for the calendar year as seen on cumulative runoff graphs. On the Colorado River, near the CO-UT state line, 7-day average streamflow is currently 98% of normal (in the 49th percentile), but the cumulative runoff for the year is only 76% of normal (Fig. 6). On the Green River at Green River, UT cumulative runoff is 75% of normal for the calendar year, and cumulative runoff on the San Juan near Bluff, UT is at 50%.



Explanation - Percentile classes							
●	●	●	●	●	●	●	○
Low	<10	10-24	25-75	76-90	>90	High	Not-ranked
	Much below normal	Below normal	Normal	Above normal	Much above normal		

Fig. 5: USGS 7-day average streamflow compared to historical streamflow for October 18th in the UCRB.

Fig. 6: USGS cumulative runoff for the 2010 calendar year on the Colorado River near the CO-UT state line.



Water Supply and Demand

Temperatures remained above average for the UCRB and the eastern plains over the past week. For the past 30 days, temperatures throughout the basin and surrounding region have been around 3 – 6°F warmer than average. These warm conditions, combined with above normal evaporation during late summer, has meant high late-season irrigation water use. Soil moisture conditions have deteriorated significantly over the plains in the past month, and much of the UCRB shows dry soil conditions. Soil conditions in Utah and the four-corners region are in decent shape.

Though warm and dry conditions have continued, demand for reservoir water has slowed. Releases from most of the major reservoirs in the UCRB have decreased from the previous weeks. Lake Granby stayed fairly steady for the week. Lake Powell saw a 15,000 acre foot drop in its reservoir levels over the past week and is currently at 78.8% of average for this time of year and 63% of capacity.

Precipitation Forecast

Clear skies and dry conditions will prevail over the UCRB ahead of an upper level low that has been lingering over southern California for the last several days. This feature will finally begin to move over the UCRB by Thursday, bringing an increase in precipitation chances over southern portions of the basin. Quantitative precipitation forecasts are quite generous in the San Juans, with amounts exceeding 0.5 inches by late day Thursday. Lighter amounts of 0.25 inches will also be possible through Saturday on the western slope of Colorado and along the Continental Divide. Snow is expected to remain confined to elevations above 9000 ft, where 4 inches of wet accumulation can be expected by this weekend in the southern and central mountains. For Saturday and Sunday conditions are forecast to dry out before the next pattern change occurs sometime on Monday/Tuesday. Not much detail is available yet on how the pattern will evolve next week, so for now will stick with the expectation of cooler temperatures and another chance of precipitation in the early/midweek periods.

Drought and Water Discussion

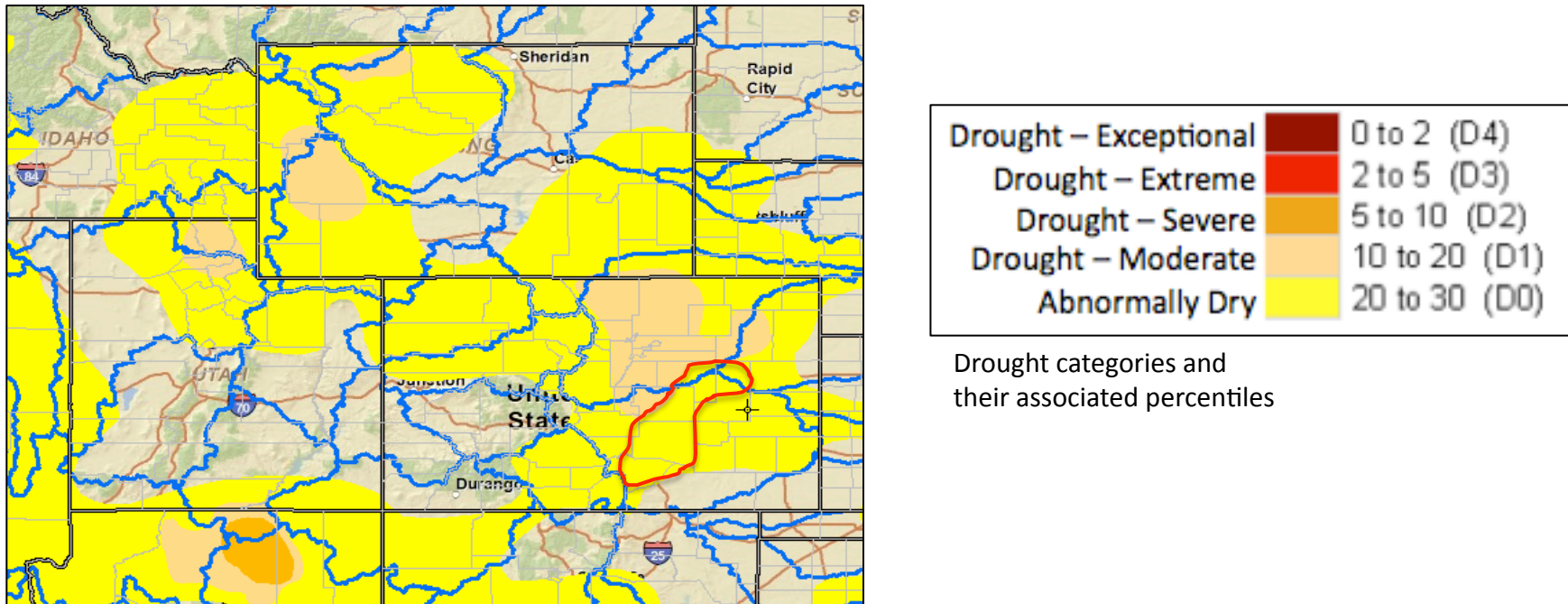


Fig. 7: October 12 release of U.S. Drought Monitor for the UCRB

As conditions continue to deteriorate east of the Upper Colorado River Basin, expansion of D1 is being suggested for the current U.S. Drought Monitor map (Fig. 7). Recent rains have done little to improve soil conditions in the eastern plains, and 60-day SPIs range from -1.5 to -2.5 (Fig. 8). Particularly dry counties include Elbert and Lincoln counties and also Pueblo County. Currently, only the western portion of Elbert County is in D1. It is suggested that this D1 be expanded eastward through Lincoln County and southward into Huerfano County (Fig. 7, red line). It is also suggested that this region be watched carefully, as it could soon deteriorate to the D2 category, though it may be unwarranted to have a 2-category deterioration in one week at this time of year.

Per input from local experts, the DM author has also expanded the D1 line northeast into southwest Nebraska, due to streamflow percentiles and poor 3-month SPI values.

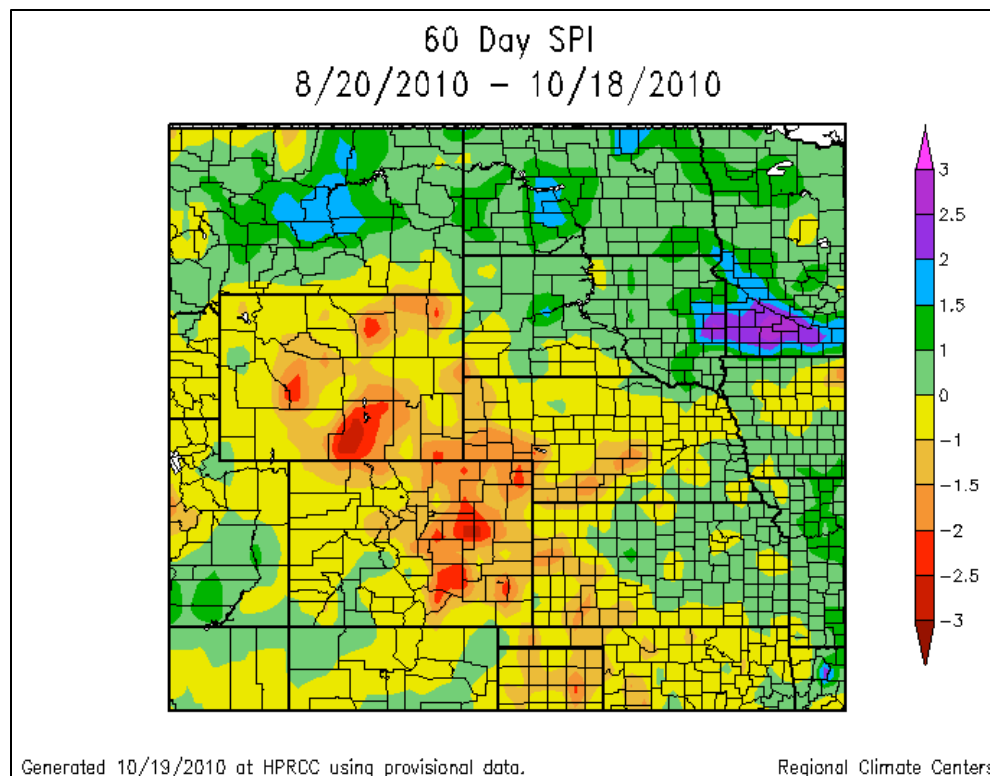


Fig. 8: 60-day Standardized Precipitation Index (SPI) values for the UCRB and east as of October 18th.